

Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) An industrial control system for controlling an industrial process comprising:
 - a plurality of control devices ~~each of which contributes to the controlling of the controlled process by~~ communicating data over a control network using a control network protocol, wherein each control device includes a respective web server program that may directly respond to and provide Internet application level socket API data and wherein each control device provide signals to or receive signals from the industrial process to control the industrial process;
 - a web access interface including an Internet interface and a control network interface, wherein the control network interface is coupled to the plurality of control devices by way of the control network, and wherein the Internet interface is capable of being coupled to a remote device via the Internet, the web access interface executing:
 - an Internet communications program executing on the web access interface that receives an Internet signal from the Internet having Internet application level socket API data and formatted in accordance with an Internet transport layer protocol and an Internet network layer protocol, wherein the Internet communications program extracts the Internet application level socket API data from the Internet signal and provides an Internet application level socket API signal including the Internet application level socket API data; and
 - a control network communications program executing on the web access interface that receives the Internet application level socket API signal and transmits a network signal over the control network based upon the Internet application level socket API signal to an appropriate one of the control devices selected in accordance with the Internet signal for response to the Internet application level socket API data, wherein the Internet application level socket API data is included within the network signal and processed by the respective web server program at the one of the control devices, and

wherein the network signal is formatted and transmitted according to a protocol of the control network and not formatted or transmitted in accordance with any Internet transport layer protocol and any Internet network layer protocol.

2. (Currently Amended) The industrial control system of claim 1, wherein the control network communications program further receives an additional network signal from another of the control devices and provides an additional Internet application level socket API signal based upon the additional network signal, wherein both the additional network signal and the additional Internet application level socket API signal include application-level information; and

wherein the Internet communications program receives the additional socket API signal and formats the additional Internet application level socket API signal in accordance with the Internet transport layer protocol and the Internet network layer protocol for transmission over the Internet to an additional remote device.

3. (Currently Amended) The industrial control system of claim 1, wherein the control network communications program encodes the Internet application level socket API data from the Internet application level socket API signal with a second protocol different from the Internet transport layer protocol and an Internet network layer protocol, whereby the control devices can provide web functionality without the overhead of an Internet transport layer protocol and an Internet network layer protocol.

4. (Original) The industrial control system of claim 1, wherein the Internet communications program includes a first software program for processing an Internet media access control protocol with respect to the Internet signal.

5. (Original) The industrial control system of claim 4, wherein the Internet media access control protocol is one of an Ethernet protocol, a Token Ring protocol, a FDDI protocol, an ATM protocol, a SONET protocol, an X.25 protocol, and a frame relay protocol.

6. (Original) The industrial control system of claim 4, wherein the Internet communications program includes a second software program for processing an IP protocol with respect to the Internet signal, wherein the processing includes obtaining an IP address.

7. (Original) The industrial control system of claim 6, wherein the Internet communications program includes a third software program for processing a TCP protocol with respect to the Internet signal.

8. (Previously Presented) The industrial control system of claim 1, wherein the web server program implements at least one of an HTTP, an FTP, an SMTP, a Telnet command, a DNS command, and a WINS command based upon the socket API data.

9. (Currently Amended) The industrial control system of claim 1, wherein the control network communications program includes a first program for formatting the Internet application level socket API signal in accordance with an internal media access protocol.

10-20. (Cancelled)

21. (Currently Amended) A method of communicating information on an electrical network between a plurality of control devices each comprising electrical circuits communicating electrically with the network within an industrial control system and a remote device coupled to the industrial control system by way of the Internet, wherein each of the control devices has a respective ~~web~~ server program executing on a computer associated with the control device, the method comprising executing one or more programs on the control devices in order to implement the steps of:

receiving a request signal at a web access interface, wherein the request signal has been provided over the Internet from the remote device;

processing an Internet media access control protocol and a TCP/IP protocol with respect to the request signal by way of an Internet communications program of the web

access interface, in order to extract Internet application level socket API data in the form of a Internet application level socket API signal;

determining an appropriate destination control device from among the plurality of control devices;

formatting the Internet application level socket API signal in accordance with a control network protocol and an internal media access control protocol to produce a network signal; and

delivering the network signal to the appropriate destination control device so that the Internet application level socket API data can be processed by the respective web server program.

22. (Currently Amended) The method of claim 21, further comprising:
providing an additional network signal from one of the plurality of control devices to the web access interface, wherein the additional network signal includes additional Internet application level socket API data;

processing the additional network signal with respect to the control network protocol and the internal media access control protocol to produce an additional Internet application level socket API signal;

formatting the additional Internet application level socket API signal in accordance with the TCP/IP protocol and the Internet media access control protocol to generate an Internet signal; and

providing the Internet signal onto the Internet for transmission to an additional remote device.

23. (Original) The method of claim 22, wherein the Internet signal is transmitted as a series of separate data packets.

24. (New) An industrial control system for controlling an industrial process comprising:

a plurality of I/O modules, providing signals to or receiving signals from the industrial process, the I/O modules holding a server program operating to receive and

transmit Web application-layer socket API data, the I/O modules further communicating with a control network not using an Internet transport layer protocol and an Internet network layer protocol;

a web access interface including an Internet interface communicating with the Internet and with a control network, the web access interface including a computer executing at least one stored program to:

(i) receive an Internet signal from the Internet having incoming Internet application level socket API data and formatted in accordance with an Internet transport layer protocol and an Internet network layer protocol;

(ii) extract the incoming Internet application level socket API data from the Internet signal;

(iii) forward the incoming Internet application level socket API data to an appropriate one of the I/O modules selected in accordance with the Internet signal;

(iv) receive outgoing Internet application level socket API data from the one of the I/O modules;

(v) format the outgoing Internet application level socket API data for transmission on the Internet; and

(vi) transmit the outgoing Internet application level socket API data on the Internet.